

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 31233/14X223	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416).	
International Application No. PCT/NZ2002/000222	International Filing Date (day/month/year) 23 October 2002	Priority Date (day/month/year) 5 January 2002
International Patent Classification (IPC) or national classification and IPC Int. Cl. ⁷ E03D 11/02, E03D 11/08		
Applicant SILENTNITE 02 COMPANY LIMITED et al		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 3 sheets, including this cover sheet.
☒ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 4 sheet(s).

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 4 July 2003	Date of completion of the report 13 April 2004
Name and mailing address of the IPEA/AU AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaaustralia.gov.au Facsimile No. (02) 6285 3929	Authorized Officer C. NGUYEN-KIM Telephone No. (02) 6283 2121

I. Basis of the report**1. With regard to the elements of the international application:***

- ☐ the international application as originally filed.
- ☒ the description, pages 1 – 13, as originally filed,
pages , filed with the demand,
pages , received on with the letter of
- ☒ the claims, pages , as originally filed,
pages , as amended (together with any statement) under Article 19,
pages , filed with the demand,
pages 14 – 17, received on 2 April 2004 with the letter of 2 April 2004
- ☒ the drawings, pages 1 – 3, as originally filed,
pages , filed with the demand,
pages , received on with the letter of
- ☐ the sequence listing part of the description:
pages , as originally filed
pages , filed with the demand
pages , received on with the letter of

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

4. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/fig.

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

** Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).*

*** Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report*

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**1. Statement**

Novelty (N)	Claims 1 – 13	YES
	Claims	NO
Inventive step (IS)	Claims 1 – 13	YES
	Claims	NO
Industrial applicability (IA)	Claims 1 – 13	YES
	Claims	NO

2. Citations and explanations (Rule 70.7)

The following international search report citations have been considered for the purpose of this statement:

D1: WO 00/50700 A

D2: Derwent Abstract no. 2002-014918/02, JP 2001 279793 A

D3: Derwent Abstract no. 2002-003748/01, JP 2001 271407 A

D4: Derwent Abstract no. 2001-046595/06, JP 2000 309968 A

D5: Derwent Abstract no. 99-605219/52, JP 11 264173 A

D6: Derwent Abstract no. 99-248798/21, JP 11 71801 A

D7: Derwent Abstract no. 97-432201/40, JP 9 195366 A

D8: Derwent Abstract no. 97-049058/05, JP 8 302797 A

D9: DE 2700781 A

Novelty (N) Claims 1 – 13:

Claims 1 – 13 are novel in the light of D1 – D9 all of which disclose an improved toilet and flushing system and a method thereof having most of the essential features of the claims. For example, D1 discloses a water efficient toilet (10) having a toilet bowl (28), a pressured water supply (12), a flow regulator (14), a water outlet (40) located at the bottom of the bowl to create a venturi effect to evacuate waste and water from the bowl, and water outlets (50) located at the top of the bowl to wash the wall of the bowl.

However, none of the citations disclose that the water outlet at the bottom of the bowl is aimed against a surface of the toilet bowl.

Inventive Step (IS) Claims – 13:

Claims 1 – 13 involve an inventive step for the same reason above.

Industrial Applicability (IA) Claims 1 – 13:

The claims satisfy the requirements of industrial applicability.

WHAT WE CLAIM IS:**1. A toilet comprising**

a toilet bowl having a water outlet,

a first water supply conduit having at least one outlet in the vicinity of an upper
5 region of the toilet bowl,

a second water supply conduit having an outlet in a lower region of the bowl, the
outlet of the second water supply conduit oriented to direct water passing
therethrough towards the water outlet and against a surface of the toilet bowl,

a water inlet conduit adapted for connection to a pressurised water supply and to
10 channel water to said first and second water supply conduits,

a first flow regulator in said first water supply conduit and a second flow
regulator in said second water supply conduit,

a control device configured to operate said first and second flow regulators to
control the flow of pressurised water in said first and second water supply
15 conduits to selectively deliver water from the pressurised water supply,

a) via the second water supply conduit to create a venturi effect to evacuate
waste and water from the toilet bowl; and

b) via the first water supply conduit to travel along the wall of the toilet
bowl to thereby wash and refill the toilet.

20 2. A toilet as claimed in claim 1, wherein the diameter of the outlet of the second
water supply conduit is less than the diameter of the second water supply
conduit.

3. A toilet as claimed in claim 1 or claim 2, wherein the control device is operably connected to the flow regulators, such that when the control device is activated to flush the toilet, the control device is configured to operate the flow regulator so that:
- 5 a) water from the pressurised water supply enters the bowl via the first water supply for a predetermined period of time,
- b) water from the pressurised water supply enters the bowl via the second water supply conduit from the bottom outlet for a predetermined period of time;
- 10 c) water from the pressurised water supply then re-enters the bowl via the first water supply conduit for a predetermined period of time; and then
- d) water supply to the bowl is shut off, until the control device is reactivated to flush the toilet.
4. A toilet as claimed in any one of the preceding claims, wherein the water inlet
- 15 conduit is adapted for connection to a mains water supply having a water pressure of at least 30 PSI.
5. A toilet as claimed in any one of the preceding claims, wherein the at least one outlet in the vicinity of an upper region of the toilet bowl is/are positioned about the top of the bowl, such that water exiting the outlet or outlets travels around
- 20 and down the walls of the bowl in a substantially clockwise or anti-clockwise direction.
6. A toilet, as claimed in claim 5, wherein the top outlet or outlets are configured to allow for water to be directed onto the top of the wall of the toilet.
7. A toilet as claimed in any one of the preceding claims, wherein water exiting the
- 25 outlet of the second water supply conduit does so through a tapered end portion which increases the velocity of the water and directed it towards the water outlet

of the toilet bowl at a point on the wall of the toilet bowl approximately 5 centimetres above the outlet of the second water supply conduit such that water and waste are sucked out of the bowl to leave the bowl empty.

8. A toilet as claimed in any one of the preceding claims, wherein the flow regulators comprise on/off valves.
9. A toilet as claimed in any one of the preceding claims, wherein the flow regulators comprise a solenoid valve having an inlet and two outlets wherein the valve is configured to be capable of:
- a) directing water to either the first or second water supply conduits, and
 - b) shutting off the water supply to both water supply conduits.
10. A toilet as claimed in any one of claims 1 to 8, wherein there are provided two flow regulators in the form of separate solenoid valves each having an inlet and an outlet.
11. A toilet as claimed in any one of the preceding claims, wherein the control device is an electronic timing device.
12. A method of flushing a toilet comprising the steps of:
- a) controlling the flow of a pressurised water supply to a toilet bowl,
 - b) delivering the pressurised water supply to the toilet bowl so that the pressurised water:
 - i) creates a venturi effect to evacuate waste and water from the toilet bowl by being directed towards a water outlet of the toilet bowl and against a surface of the toilet bowl, and
 - ii) travels along the wall of the toilet bowl to thereby wash and refill the toilet.

13. A method for flushing a toilet as claimed in claim 12, further comprising the steps of:

- 5 i) providing water to at least two top outlets for a predetermined period of time, wherein the top outlets are positioned at the top of the toilet bowl to direct water onto the wall of the toilet bowl,
- ii) providing water to at least one bottom outlet for a predetermined period of time wherein said bottom outlet or outlets is positioned in the base of the toilet bowl and configured to achieve a venturi effect capable of evacuating water and waste from the bowl,
- 10 iii) providing water to the at least two top outlets for a predetermined period of time, and
- iv) stopping the flow of water to the top outlets to complete the flush cycle once the bowl has been filled to the desired level.